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STATISTICAL BULLETIN
METROPOLITAN LIFE INSURANCE COMPANY
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Excellent Health Record for 1940

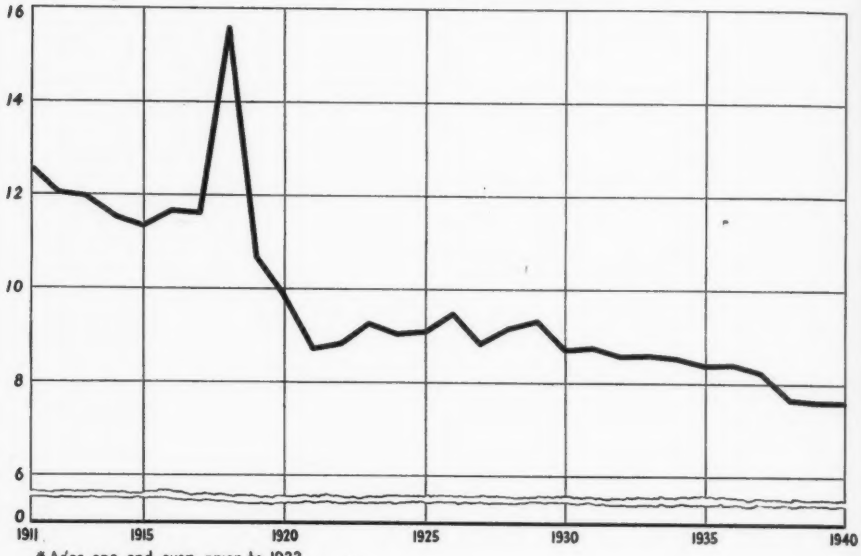
ALTHOUGH the year 1940 did not set a new low mark for mortality in this country, it ranks with the best health years on record. This very favorable experience is especially significant at this time, when the American people are making every effort to further the vast program of national defense.

Among the many millions of Industrial policyholders in the Metropolitan Life Insurance Company who live in every section of the United States and Canada, the death rate for 1940 equaled the lowest figure ever registered for this group—7.60 per 1,000 recorded in 1939. For the Company's policyholders in the United States, the crude mortality in 1940 was slightly higher than that for the previous year. This is in agreement with the experience for the general population of the country as reported on the basis of provisional figures in the December 1940 STATISTICAL BULLETIN. The death rate among the Industrial policyholders shows a moderate decrease, however, when allowance is made for changes in the composition of this group with regard to color, sex, and age. The Canadian policyholders showed a decline of 4.1 percent, both in the crude and in the adjusted rate for the year just concluded, as compared with 1939. The mortality among the Canadian policyholders has been decreasing quite steadily, and is now as low as among those living in our Pacific Coast area. It is, indeed, reassuring to both the United States and Canada that in this period of international crisis the health of their people—the first line of defense—is remarkably good.

Thirty Years of Health Progress

The year 1940 marks a milestone in the record of mortality among Metropolitan Industrial policyholders, completing an uninterrupted series which began 30 years ago. That these three decades have witnessed great strides in the advancement of the public health is clear from the fact that the death rate among these insured fell 40 percent between 1911 and 1940, as shown in the accompanying chart. This decline in mortality has resulted in a rich harvest of lives saved. If the death rate of 1911 for each color, sex, and age group had continued in

ANNUAL CRUDE DEATH RATES PER 1,000 POLICYHOLDERS, ALL AGES *
INDUSTRIAL DEPARTMENT, WEEKLY PREMIUM-PAYING BUSINESS
METROPOLITAN LIFE INSURANCE COMPANY, 1911-1940



* Ages one and over, prior to 1923.

1940, there would have been 113,295 more deaths among our policyholders, 1 year of age and over, than the number that actually occurred.

This downward sweep of mortality in the past 30 years is reflected in an increasing length of life. The average length of life of Metropolitan Industrial policyholders has now reached an all-time high of almost 63 years, a gain of 16 1/3 years in just three decades. The retreat of death has been much more rapid among the Industrial policyholders, who are for the most part urban wage-earners and their families, than for the population as a whole. In 1911 the expectation of life among these insured was 6.41 years less than that for the general population of the United States. At present, although final figures are not yet available for the country, there is every indication that the longevity of the Industrial policyholders is on a par with that of the population.

Mortality by Age

Industrial policyholders at virtually every period of life have shared in the improvement of health. As shown in the accompanying table, the drop in mortality since 1911 has been little short of remarkable at certain ages. In the group of children aged 1 to 4, the present rate is only about one seventh that of 30 years ago. Even in the age group 65 to 74 years the decline has been as much as 25.3 percent.

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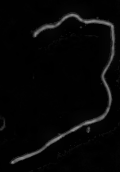

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Death Rates per 100,000 for All Causes
Total Persons, by Age Periods
Metropolitan Life Insurance Company, Industrial Department, Weekly Premium-Paying Business. 1911, 1930, and 1940

Age Period	Death Rate per 100,000			Percent Change 1940 Since:	
	1940*	1930	1911	1930	1911
Ages 1 and Over	752.1	837.1	1,253.0	—10.2	—40.0
1 to 4	206.2	495.8	1,479.1	—58.4	—86.1
5 to 9	92.8	191.0	416.2	—51.4	—77.7
10 to 14	88.9	149.4	268.0	—40.5	—66.8
15 to 19	146.3	278.8	467.8	—47.5	—68.7
20 to 24	214.0	400.5	732.5	—46.6	—70.8
25 to 34	283.3	501.9	947.7	—43 6	—70.1
35 to 44	546.9	784.1	1,367.8	—30.3	—60.0
45 to 54	1,114.5	1,486.3	1,978.3	—25.0	—43.7
55 to 64	2,421.2	2,948.2	3,596.0	—17.9	—32.7
65 to 74	5,567.5	6,028.1	7,455.0	— 7.6	—25.3
75 and over	13,841.5	12,864.6	13,926.9	+ 7.6	— .6

*Death rates for 1940 are subject to slight correction, being based on provisional estimates of policyholders.

Ten Causes of Death Establish New Low Records

In 1940, among these policyholders, no less than 10 diseases and conditions—measles, scarlet fever, whooping cough, diphtheria, pneumonia, tuberculosis, diarrhea and enteritis, appendicitis, diseases of the puerperal state, and homicide—recorded lower rates than in any previous year. For two additional causes—namely, influenza and suicide—the mortality improved in 1940, although the rates did not establish new minima.

Pneumonia Being Conquered

Overshadowing in importance all other developments in public health for the year is the sharp decline in the mortality from pneumonia. The rate for 1940 was 35.5 per 100,000, having declined from 42.8 in 1939, from 50.6 in 1938, and from 66.9 in 1937. Prior to 1937 the mortality for a number of years had fluctuated around a level of 70 per 100,000, so that the decline in the last few years is apparently a definite stepping down from an established level to a new one at about a halfway point. The increasing control over pneumonia in the last few years has surely followed from the recent introduction of highly effective serums and drug therapy which have revolutionized the clinical treatment of the disease. This development promises to mark an epoch in medical history, and illustrates once again what can be done in the conservation of human life when specific weapons are forged for the campaign against

individual diseases. The outlook for the further control of pneumonia is very encouraging, and it may not be long before the disease is reduced to a minor cause of death.

Influenza Mortality Declines

Despite the epidemic of influenza which swept large sections of the country near the close of the year, the death rate from this disease in 1940 was 20 percent lower than in the previous year. This favorable mortality experience reflects, in part, the fact that the current outbreak has been comparatively mild, in sharp contrast with the disastrous epidemic of 1918 and 1919.

Tuberculosis Declines Slightly

The successful battle against tuberculosis continues, and 1940 may be added to the long series of years which have witnessed improvements in the death rate from this cause. In 1940 the rate among Metropolitan Industrial policyholders was 44.3 per 100,000 as compared with 45.2 for the previous year. To measure the degree of success which has attended the campaign against tuberculosis, it is necessary only to indicate that the death rate from this scourge among these insured in 1911 was 224.6 per 100,000, and 80.9 only 10 years ago, as against the current rate of 44.3. Giant strides have been made in bringing this disease under control, and wholehearted support should now be given to the program of official and private health agencies to eradicate the disease in the next two decades.

Mortality from Principal Communicable Childhood Diseases at Minimum

The principal communicable diseases of childhood—measles, scarlet fever, whooping cough, and diphtheria—declined from the previous minimum of 4.2 per 100,000 in 1939 to a new record low of 2.9 in 1940, a decline of 31 percent in a single year. Each of these diseases registered a new minimum mortality in 1940, and all, except whooping cough, recorded death rates of less than one per 100,000. The total death rate for these four diseases is now less than that for measles alone about 10 years ago. Only a few decades ago this group of diseases was a serious menace to life, and in some years the death rate rose to incredible heights. Today the death toll from these conditions is at so low a point that the objective is nothing less than their complete suppression. The extraordinary success achieved with diphtheria, at one time the most menacing of the group, is sufficient warrant that this goal will be achieved.

Diarrheal Diseases at New Low

The downward trend in the mortality from diarrhea and enteritis is a triumph for the public health movement. Only a decade ago this condition recorded a figure of about 20 per 100,000 among Metropolitan Industrial policyholders. By 1940 the rate had dropped to 4.6 per 100,000, a new low mark. The progress in this field may be attributed to the advances in sanitary

Crude Death Rates per 100,000 for Selected Causes. Total Persons, All Ages. Metropolitan Life Insurance Company, Weekly Premium-Paying Business, Industrial Department, 1911 and 1930 to 1940

Causes of Death	1940(a)	1939	1938	1937	1936	1935	1934	1933	1932	1931	1930	1911(b)
All Causes of Death	760.4	760.0	766.0	822.5	839.8	837.6	854.1	860.0	856.9	877.1	873.5	1,253.0
Typhoid fever	.7	.7	1.0	.9	1.0	1.1	1.5	1.6	1.7	2.4	2.4	22.8
Communicable diseases of childhood	2.9	4.2	6.4	7.6	6.5	10.0	11.1	9.0	11.4	14.5	15.6	58.9
Measles	.3	.6	1.6	1.0	.9	2.5	2.7	1.5	1.7	3.2	2.9	11.4
Scarlet fever	.6	.7	1.1	1.6	2.1	2.6	2.6	2.6	2.8	3.2	2.5	13.1
Whooping cough	1.2	1.6	2.0	3.0	1.7	2.7	3.7	2.3	3.0	3.6	4.3	7.1
Diphtheria	.8	1.3	1.7	1.9	1.8	2.2	2.1	2.6	3.9	4.5	5.9	27.3
Influenza and pneumonia	43.4	52.7	58.1	85.1	84.5	80.8	76.4	82.8	84.5	94.8	90.5	131.1
Influenza	7.9	9.9	7.5	18.2	14.7	14.7	11.4	20.3	19.1	21.1	14.8	15.9(f)
Pneumonia—all forms	35.5	42.8	50.6	66.9	69.8	66.1	65.0	62.5	65.4	73.7	75.7	115.2(f)
Tuberculosis—all forms	44.3	45.2	47.2	52.1	54.3	55.8	59.4	64.7	69.8	76.2	80.9	224.6
Tuberculosis of respiratory system	39.9	40.6	42.1	46.7	48.5	49.8	52.2	57.8	61.8	67.2	70.4	203.0
Syphilis	11.9(c)	11.2	11.3	11.4	11.7	11.5	12.3	11.4	11.9	11.6	11.4	11.0
Cancer—all forms	103.5	101.7	98.8	96.0	93.9	96.1	96.1	94.6	91.1	84.1	78.2	68.0
Diabetes mellitus	29.5	27.7	24.8	25.6	24.7	24.4	24.4	24.1	23.0	21.1	18.4	13.3
Alcoholism	1.2	1.3	1.5	1.9	2.2	2.1	2.3	2.2	2.4	2.9	3.1	4.0
Cerebral hemorrhage	60.8	59.7	58.5	59.7	61.9	61.2	63.2	63.8	62.1	60.4	60.4	64.2(f)
Diseases of the coronary arteries	49.5	40.2	34.3	30.6	25.4	22.7	18.8	13.5	9.4	7.0	4.7	(e)
Angina pectoris	3.0	6.3	7.1	8.0	8.6	9.3	10.0	10.8	10.7	10.0	9.4	3.9
Diseases of the heart (other forms) (d)	158.6	161.0	154.0	159.7	161.0	158.1	162.9	161.5	155.5	147.9	144.9	141.8
Diarrhea and enteritis	4.6	5.4	7.4	8.9	8.5	8.1	11.1	10.6	11.2	15.7	20.4	27.9
(under 2 years)	2.9	3.7	5.3	6.6	6.1	5.8	8.1	7.5	8.1	12.2	15.5	13.0
Appendicitis	9.1	10.3	10.5	11.2	11.4	11.4	13.1	13.2	13.2	14.1	14.1	10.9
Chronic nephritis	56.6	51.8	53.8	55.7	59.4	60.2	64.9	67.1	68.7	67.0	68.1	95.0
Puerperal state—total	4.9	5.4	6.2	6.9	7.7	8.7	8 8	9.4	10.5	11.7	12.1	19.8
Total external causes	58.9	59.4	62.2	67.7	71.5	69.6	73.2	71.9	71.5	77.6	79.0	97.9
Suicides	8.5	8.8	9.4	9.0	8.9	9.2	9.5	10.0	10.6	10.0	9.8	13.3
Homicides	3.7	4.4	4.4	4.8	5.0	5.9	5.9	6.3	6.1	7.0	6.7	7.2
Accidents—total	46.7	46.2	48.4	53.9	57.7	54.5	57.8	55.6	54.8	60.6	62.5	77.4
Accidental burns	2.5	2.4	2.5	2.7	3.1	3.2	3.6	3.3	3.7	3.8	4.6	8.8
Accidental drowning	4.2	4.2	4.9	5.4	4.8	4.9	5.3	6.1	5.9	6.4	6.2	10.2
Accidental traumatism by fall	9.2	9.7	9.9	10.4	11.3	11.4	11.1	10.6	10.1	10.0	9.6	13.2
Accidental traumatism by machines	1.0	.8	1.0	1.1	1.1	.9	.8	.8	.8	1.0	1.2	1.8
Railroad accidents (g)	2.1	2.2	2.0	2.3	2.8	2.6	2.6	2.8	2.7	2.7	3.0	9.5
Motor vehicle accidents	18.1	18.3	18.6	22.1	21.5	21.5	22.2	20.9	20.0	23.3	22.5	(i)
Automobile accidents(h)	17.0	17.3	17.6	21.0	20.1	20.3	21.1	19.8	18.9	22.0	20.9	2.3
All other accidents	10.2	9.2	10.2	10.6	14.0	10.8	12.8	11.8	12.3	14.2	16.3	31.6
Other diseases and conditions	117.0	115.8	122.9	133.5	145.6	146.5	144.6	147.8	148.3	158.1	159.9	257.9

(a) All 1940 death rates are subject to slight correction, since they are based on provisional estimates of lives exposed to risk.
(b) Ages 1 and over.
(c) Includes aneurysm of the aorta.
(d) Excludes pericarditis, acute endocarditis, and acute myocarditis.
(e) Included in all other diseases and conditions.
(f) Not comparable with the rates for 1930 to 1940.
(g) Includes collisions between automobiles and railroad trains.
(h) Excludes collisions between automobiles and railroad trains or streetcars.
(i) Not available.

science, to the general rise in the standard of living, the pasteurization of milk, the better refrigeration of foods, and the purification of water supplies.

Childbearing Safer

Life is becoming safer not only for infants and children but also for mothers. The puerperal death rate in 1940 fell almost 10 percent from the level of the previous year, to establish the lowest rate ever attained for these Industrial policyholders. This decline, large as it is, is an understatement of the degree of improvement, inasmuch as preliminary figures indicate that a larger number of women bore children in 1940 than in the year before. It was not so long ago that the high puerperal death rate in this country was characterized as a national disgrace. The medical journals and public health literature called attention to this serious situation as being incongruous with the advances which medical science and practice had made. In recent years, however, marked progress has been made in this field, and the campaign against the needless sacrifice of women in childbirth is going forward toward its goal.

Appendicitis Death Rate at All-Time Low

The mortality from appendicitis continues its downward trend. The death rate for 1940 dropped 12 percent from the previous year, to register a new low rate of 9.1 per 100,000 among the Company's Industrial policyholders. This achievement is of especial interest in view of the alarm with which the rising tide of appendicitis deaths was observed about a decade ago. It was a paradox that while rapid advances were being made in surgery, deaths from this disease continued to increase. Physicians and public health workers, aware of their responsibilities, began an intensive campaign to remedy this deplorable situation, and our figures show how successful they have been. Having cooperated actively in the series of campaigns to curb this largely preventable cause of death, the Metropolitan is particularly proud of this record.

Syphilis

Because of changes in classification required by the latest revision of the International List of Causes of Death,* the death rate for syphilis in 1940 is not strictly comparable with that for previous years. Aneurysm of the aorta, previously classified with the diseases of the circulatory system, is now allocated to the syphilis title. If the death rate for 1940 is computed on the same basis as that for previous years, the figure is somewhat below that prevailing during the past decade. With the country now mobilizing its man power, the campaign to reduce syphilis becomes an effort of major importance.

*Every 10 years delegates from a number of countries meet to revise the International List of Causes of Death, in order to keep the classification of diseases throughout the world abreast of the steady advances in medical science. The fifth revision of the List will govern the classification of causes of death for the decade 1940 through 1949.

Accidents

The loss of life from accidents (all forms) among Metropolitan Industrial policyholders in 1940 was only slightly higher than the toll taken in 1939, when the minimum record was established. None of the leading causes of accidental death showed a marked change for 1940. Those charged with the responsibility of reducing the loss of life and limb from accidents have a special task, now that large numbers of inexperienced workers are being introduced into defense industries. The general speeding-up of industrial production will also tend to a higher accident rate.

Suicides, Homicides

Fewer Metropolitan Industrial policyholders committed suicide in 1940 than in the year before. In fact, the suicide rate of 8.5 per 100,000 for the year just concluded is the lowest in a decade. Homicides have shown an even greater relative drop, from 4.4 per 100,000 in 1939 to 3.7 in 1940, to establish a new low.

Unfavorable Record for Diseases of Later Life

The increases in mortality which occurred last year among the Industrial policyholders were limited almost altogether to the chronic diseases characteristic of middle and later life. The crude death rates from diabetes, cancer, and the cardiovascular-renal diseases* are now at higher levels than ever before. To a large degree the upward trend in mortality from these diseases reflects the increased proportion of policyholders at the older ages. These causes of death will probably increase in relative importance in the next few decades. Medical practice in the future must be directed more and more toward the prevention or postponement of these disabling diseases.

Mortality in Europe in 1940

IN CONTRAST with the extremely favorable health record of the American and Canadian people during the year just closed, Europe has experienced the worst record in many years. The full extent of the toll of life taken in Europe last year is as yet unknown, and indeed, as was the case for the World War years, it may never be accurately known. The situation, as summarized here, is taken from official reports and from statements by careful observers, but many of the statements are necessarily based upon estimates. Even grimmer than the actual developments of last year, however, are the potential threats to the health of the people of most European countries in the months to come.

In England, for which available

*Because of revisions in the International List of Causes of Death, the death rate from chronic nephritis for the year 1940 is not strictly comparable with those for previous years. If the rate for this year were computed on a comparable basis, the figure would be slightly lower than that for 1939. Similarly, if no change in classification had taken place, the death rate from diseases of the heart would have shown a 2-percent increase over that for the previous year.

data are the most complete, the outstanding losses due directly to the war are the civilians killed in air bombardments the official total of which deaths in 1940 was 23,081. Indirectly, the air war on civilians also was responsible for the sharp rise in fatalities in highway accidents, most of which have occurred during blackouts. The number of such fatal accidents during the first 15 months of the war was 11,424, or 3,141 in excess of the total for the 15 months preceding the war.

Among the diseases, first in interest as directly related to the war is cerebrospinal fever,* the incidence of which has shown a marked rise in England, partly as a result of overcrowding in the air-raid shelters in large cities. Last year the number of cases of this disease—normally a disease of rather low frequency—was officially estimated at 12,500, or about eight times the number recorded in 1939. While chemotherapy has lowered the case fatality rate, it still remains high, and the number of deaths may exceed 2,500. Since children are the chief victims, the evacuation of children from endangered cities undoubtedly saved many lives.

Another notable development was the high mortality in the first quarter of the year, when there was a moderate influenza epidemic. This was largely responsible for the rise in the death rate from all causes to the highest point reached in any quarter of any year since 1929. The death rate in the first quarter of 1940 was approximately one third higher than in the corresponding period of 1939. The mortality from influenza itself, which accounted for 5 percent of the deaths, was two thirds above that for the preceding year. While war conditions cannot alone be blamed for this influenza outbreak, they contributed to the spread of the disease and the rise in fatalities. Infant mortality was also sharply up, to 77 per 1,000 live births as compared with 65 in the first quarter of 1939. In the second quarter, the death rate from all causes was slightly better than in 1939.

Unfortunately these figures for the first and second quarters are the only mortality data available for the country as a whole. Later information is available for the population of cities of 50,000 or more, and in even greater detail for London, but the drastic changes in the population of these cities, because of the evacuation policy and the absence of men on war service, renders it impossible to make accurate comparison with earlier years. Certain of the facts, however, are worth quoting. Despite the decreased populations of these cities, the aggregate number of deaths in them up through December 14th was 46,000 more than in the corresponding weeks of 1939, an increase of about 20 percent. In London itself, the increase was 12,500, or 30 percent above the number in the corresponding period of 1939. Since evacuation of the population from London has probably been relatively

*More commonly known in the United States as cerebrospinal meningitis.

greater than from most areas, the increase in the death rate must appreciably exceed this ratio.

Certain features of the more detailed statistics for London, complete for 50 weeks of the year, are of great interest. The most drastic rises proportionately were recorded in deaths from accidental causes—which include those from air raids—from 1,524 in the first 50 weeks of 1939 to 9,471 in the same period for 1940. Deaths from cerebrospinal fever rose from 31 in 1939 to 156 in 1940. The *number* of suicides showed no marked change last year from the two preceding years. The *rate*, however, may have shown a small increase. This is remarkable in view of the enormous strain on London's population. This finding is in line with reports of reputable English psychiatrists as to the comparatively low rate of acute psychosis in English cities subjected to air warfare. To some extent, the nervous strain on London's population has been reflected in the appreciable rise in the mortality from ulcers of the stomach and duodenum, which increased approximately one third.

These figures, relating as they do to English civilians, exclude deaths in the vastly expanded military and naval services, and losses of personnel and passengers on merchant ships. When all these are counted it is likely that English death losses, as a whole, in 1940 will exceed recent normal peacetime figures by approximately 120,000. While no one would minimize the seriousness of this extra mortality, half of which was due to direct enemy action against the civil population and defense force, it is so much less than what was expected, that the British people, their leaders, and medical and health authorities have been much heartened.

When we turn to the Continent, the data on mortality are fragmentary indeed. Some figures are available for certain of the large cities for the first quarter of the year. For that period the number of deaths in Paris was somewhat smaller than for the preceding year, but when allowance is made for the evacuation of children and for the absence of men in military service, it is likely that the mortality was substantially the same as in 1939. Amsterdam, Copenhagen, Stockholm, and Budapest, on the other hand, showed moderate rises in mortality during that first quarter of 1940. Influenza, generally mild in character, was prevalent, in the first part of 1940, in epidemic proportions in several parts of northern, western, and central Europe, more particularly in Germany, Denmark, Switzerland, and Hungary. This was reflected in a moderate rise in the general death rate in these areas.

General mortality data for the Continent for the rest of 1940 are not available. A recent official statement for unoccupied France notes that mortality in the civilian population has not been high except among the newborn and among the very old. So far as Germany is concerned, it is likely that the health of her own population has not

deteriorated, as compared with 1939, because the countries she has occupied have provided additional stores of food to maintain the nutrition of her own people. For the occupied countries and Italy, no recent factual data on mortality are obtainable. But scattering reports indicate a large increase in the death rate in some Polish cities.

In all of the belligerent countries of the Continent also, there was a substantial number of deaths among civilians from military action, but the facts are not known and the estimates vary too widely to be worth quoting in detail. It is certain, however, that Germany's and Italy's losses have been relatively light.

Some consideration must also be given to death losses in the armies. Last year France suffered the heaviest losses, estimated at 70,000 to 100,000. German losses of troops killed in action seem to have been in the neighborhood of 50,000. Losses of life in action in all branches of the British war services may be estimated at about 25,000. Italy's admitted losses up to December 12th were 4,531, of whom 3,655 were Italians, but these were considerably augmented in Albania and Africa in the last part of December.

The prevalence of some of the communicable diseases last year is also of great interest. Cerebrospinal fever, which caused so many deaths in Britain, was increasing in Italy, Switzerland, Hungary, and Yugoslavia. In France also, cases of the disease increased sharply during February 1940, the last month for which information is available. In Germany the increase over 1939 was relatively small, but that year the incidence of the disease had nearly trebled.

Most important is the situation with respect to typhus fever. In some eastern European areas in which the disease is normally endemic, its incidence rose appreciably last year. The largest number of cases was reported in Rumania. There the number of cases up through October 1940 was nearly double that reported in 1939. Cases were also reported in increased numbers last year in Bulgaria, Turkey, and Hungary. For Poland, in sections of which the disease is also endemic, comparative data are not available, but numerous cases have been reported in the parts of the country under German domination. Cases have likewise been reported in Germany, but whether they occurred among persons transferred from occupied areas is not revealed.

Thus far, the number of cases has not reached alarming figures, but the basic conditions in eastern and southeastern Europe are such that severe epidemics of the disease are likely to occur. The peoples in these areas are normally so close to a mere subsistence level, that the poor crops of last year and the export to Germany of grains and fats, combined with the lack of sufficient local transport, will cut the standard of living to a dangerously low point. Typhus is usually most prevalent in the late winter and spring. Thus,

while the ravages of typhus have been held within bounds in 1940, the prospect in 1941 is indeed dark. Deaths from the disease in and after the last war reached enormous figures, estimated reliably as high as 3,000,000. We cannot be certain that the frightful breakdown in sanitary conditions that occurred then can be avoided. That is why the situation with respect to this disease is being so closely watched.

Typhoid and dysentery were abnormally high in frequency in local areas in various countries. There were no widespread epidemics causing large numbers of deaths.

Pneumonia and influenza showed an abnormally high prevalence only in the early months of 1940, as far as can be ascertained, but conditions favor a marked rise in these diseases in the coming months, more especially in the countries occupied or dominated by Germany. Increased prevalence of these diseases and an alarming rise in the general death rate are especially to be feared because shortages of food, so extreme as to approach famine conditions in some areas during the coming months, may bring weakened resistence to relatively mild infections among millions of people in these territories. While privation and suffering were the lot of a great part of these populations in 1940, conditions were not yet sufficiently bad to be reflected in a general and sustained rise in the death rate in these areas. It is the potential situation in 1941 that is so appalling, because of the shortages of food, fuel, and medical supplies, and because of the disruption of facilities for their distribution.

However, it is possible that strict rationing of supplies, combined with favorable weather conditions, will prevent or moderate the rise in mortality in 1941. But there are still other sources of risk. In England, and to a lesser extent in Germany, crowding in air shelters, as well as the poor sanitary conditions in many of them, would supply the very conditions for an uncontrollable spread of contagion and the flaring up of communicable and infectious diseases to pandemic proportions. Mindful of this, English authorities have concentrated on improving air-raid shelter facilities to minimize the risk, and are confident that these efforts will be successful. Another threat to European populations, especially of England and Germany, is constituted by the absence on war service of many thousands of physicians, nurses, and other medical personnel, and this has made serious inroads on civilian medical service.

To summarize then: High as were Europe's death losses in 1940, both among civilians and in the military forces, they were by no means disastrous. By comparison, the sufferings and losses among civilians in the present war have been relatively heavier than in the early part of the World War, the first year of which, while marked by enormous losses in the military forces, had comparatively normal mortality conditions among civilians in most of

western Europe. The outlook for 1941 cannot be accurately foretold, but we have every reason to be apprehensive about it.

Dental Care and National Health

IT MAY seem like an exaggeration to say that defective teeth are interfering with plans for national defense, but the fact is that this condition has thus far been the most frequent cause of rejection for selective service. Judging from the record made by the random selection of men called for medical examination under the Selective Service Act, the present state of dental health among our people is decidedly unsatisfactory. Since there is a dearth of data regarding the dental condition of the general population, in relation to sex and age, it may be of interest to examine the situation observed from the records of 12,753 Home Office employees of the Metropolitan Life Insurance Company.

The employees represented a considerable variety of occupations, including plumbers, carpenters, clerks, executives, and professional workers; their ages ranged from 17 years to over 65. Dental examinations were made in a completely routine manner, without regard to the individual's need for dental treatment. A record was made of the total number of affected teeth, without regard to the degree of decay, and of the total number of tooth surfaces affected, making an approximate allowance for the average number of such surfaces corresponding to a crown or a missing tooth. The results of this study are shown in the chart on page 13.*

Inspection of the left-hand panel of the chart shows that, throughout adult life, women have a slightly greater number of defective teeth than men. In the youngest age group, 17 to 19 years, males had an average of 12 affected teeth per person, while among females the average was 12¾ teeth per person. The figures increase rapidly with age up to about 35 years, with the curve for males consistently, although only slightly, lower than that for females. The situation as it obtains among men between ages 20 and 34 is of special interest in view of the experience among draftees. The number of affected teeth among male Home Office employees in the age groups 20 to 24, 25 to 29, and 30 to 34, respectively, was 15¾, 17¾, and 20 per person. On the whole, it may be said that at least half the teeth of the average man in the ages 20 to 34 have been affected by decay or are missing, the normal number of teeth in a complete set being 32.

The curves showing the number of affected teeth per person among males and females rise less rapidly at ages 35 and over, but the margin between the two sexes widens up to

*For full details of this investigation, the reader is referred to the article "A Study by Age and Sex of the Incidence of Dental Caries in Over 12,000 Persons," by F. Hollander, Research Associate, Dental School, Columbia University, and J. M. Dunning, Dental Director, Metropolitan Life Insurance Company, in the *Journal of Dental Research*, volume 18, February 1939.

the age group 50 to 54 years. Here it is found that among males there were, on an average, 21¼ affected teeth per person, while among females the figure was 24⅔. No explanation could be found for the drop in the curve for females at ages 60 to 64 years below the curve for males, except perhaps that the size of the sample was inadequate.

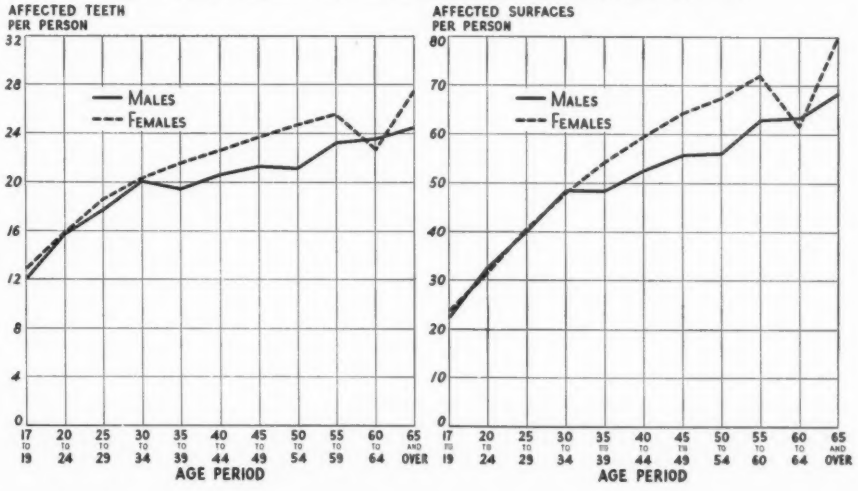
The right-hand panel of the chart shows the sex and age incidence of affected *tooth surfaces* per person. Up to age 35 the curves for men and women intertwine; otherwise the characteristics of the curves for affected surfaces are similar to those already observed for affected teeth.

The charts present evidence that dental caries continues to develop beyond the ages of childhood and adolescence, and at least to middle life. Thus, we find that up to age 35, new dental caries develops at a rate of about 1¾ affected surfaces per person per year of age. Beginning with age 35, the curves show a progressive slowing down of the rate of development of new lesions with advancing age. At ages 35 and over the average rate of formation of decay is about 0.5 of a surface per person per year of age.

Dental decay occurs most frequently on the biting surfaces of the molars. A study of 3,000 Home Office employees of the Metropolitan Life Insurance Company under 25 years of age showed that there actually were, on the average, more than one cavity on the biting surface of the first and second molars. Next in order of susceptibility to decay are the biting surfaces of the bicuspid teeth. In the group of young persons examined, one half of the second bicuspid teeth had decay on the occlusal (biting) sur-

TOOTH DECAY IN RELATION TO SEX AND AGE

HOME OFFICE EMPLOYEES OF THE METROPOLITAN LIFE INSURANCE COMPANY



face. In the first bicuspids, one in every four was so affected. When all surfaces are considered, decay is least frequent in the lower six front teeth (cuspids and incisors).

From the situation just described, it is apparent that public health efforts to promote care of the teeth should not be restricted to the ages of childhood and adolescence. It is true enough that dental caries develops most rapidly at ages before maturity, but the rate at which it develops among adults is by no means negligible. The frequency with which men called for draft were rejected from service because of bad tooth conditions should provide us an object lesson. The importance of sound dental care for children, young adults, and also for those at the later ages, cannot be stressed too much. Infections carried from diseased teeth into the blood stream have been known to cause a number of those chronic disturbances that become prominent after midlife.

Health Record for December 1940

ON THE whole, the health of the Metropolitan Industrial policyholders continued on a favorable level during the month of December. An exception to this experience is the Pacific Coast, where a sharp increase in the death rate was registered for the month. There is definite indication that the influenza epidemic, although comparatively mild, has taken a considerable toll of life in this area.

For the general population of the United States as a whole the health record for the month is good. The total number of deaths reported in the general population of 88 major cities was less than the average reported by these cities in December during the previous three years, and was only slightly higher than the number of deaths that they reported in December a year ago.

In the general population of the United States there was less sickness from diphtheria, poliomyelitis, and typhoid fever than was reported in either the month of November of the current year or in December a year ago. There were the usual seasonal increases in the incidence of scarlet fever and smallpox, but the number of cases of these diseases were less than that reported in December last year. The chief increases among the important communicable diseases were registered by influenza and measles, the prevalence of each of which was not only well above the number of cases reported in November, but was greatly in excess of that reported in December 1939. There was a slight decrease in the morbidity from whooping cough, but the number of cases remained substantially higher than that reported in December a year ago.

The following table shows the mortality among Industrial policyholders for December 1940, November 1940, and December 1939, together with the death rates for the years 1940 and 1939.

METROPOLITAN LIFE INSURANCE COMPANY

Death Rates per 100,000 Policyholders from Selected Causes. Industrial Department. Weekly Premium-Paying Business*

Causes of Death	Annual Rate per 100,000 Policyholders*				
	December 1940	November 1940	December 1939	Year 1940	Year 1939
All Causes—Total	757.6	706.6	747.0	760.4	760.0
Typhoid fever	.6	.8	.4	.7	.7
Measles	.1	.1	.2	.3	.6
Scarlet fever	.6	.5	.7	.6	.7
Whooping cough	1.4	1.1	1.2	1.2	1.6
Diphtheria	1.0	1.1	1.4	.8	1.3
Influenza	7.8	2.7	7.7	7.9	9.9
Pneumonia (all forms)	36.1	28.1	40.2	35.5	42.8
Tuberculosis (all forms)	38.7	40.1	40.7	44.3	45.2
Tuberculosis of respiratory system	35.0	36.5	36.6	39.9	40.6
Syphilis	12.8	11.1	9.8†	11.9	11.2†
Cancer (all forms)	99.8	95.5	99.8	103.5	101.7
Diabetes mellitus	27.5	28.0	26.9	29.5	27.7
Cerebral hemorrhage	60.6	53.8	59.9	60.8	59.7
Diseases of the coronary arteries	53.0	48.2	44.0	49.5	40.2
Angina pectoris	4.3	2.3	5.2	3.0	6.3
Diseases of the heart (other forms)‡	150.2	143.0	157.9	158.6	161.0
Diarrhea and enteritis	4.1	4.9	4.2	4.6	5.4
Appendicitis	6.8	8.2	8.2	9.1	10.3
Chronic nephritis	50.4	50.7	51.0	56.6	51.8
Puerperal state—total	3.5	4.5	3.7	4.9	5.4
Suicides	7.6	6.9	6.7	8.5	8.8
Homicides	2.8	3.7	3.3	3.7	4.4
Accidents—total	48.6	48.8	45.7	46.7	46.2
Home accidents	11.2	9.8	11.6	11.7	11.7
Motor vehicle accidents	21.4	21.3	20.3	18.1	18.3
Automobile accidents§	20.3	20.6	19.1	17.0	17.3
All other causes of death	139.4	122.6	128.3	118.2	117.1

*The rates for 1940 are subject to slight correction, since they are based on provisional estimates of lives exposed to risk.
†Excludes aneurysm of the aorta.
‡Excludes pericarditis, acute endocarditis, and acute myocarditis.
§Excludes collisions between automobiles and railroad trains or streetcars.

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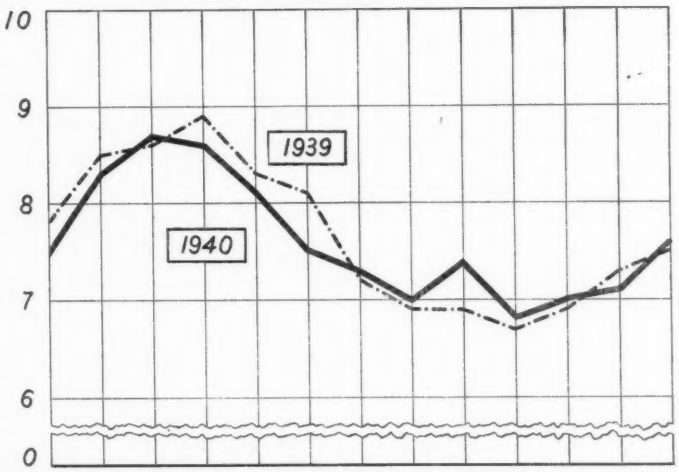
MORTALITY FROM ALL CAUSES

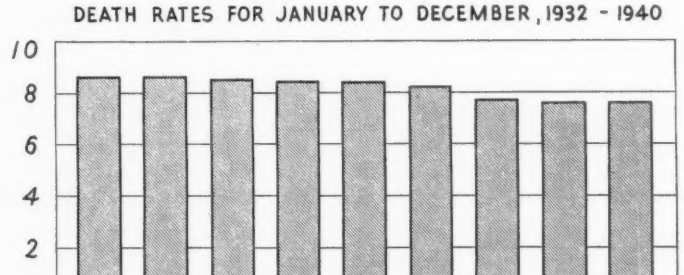
METROPOLITAN LIFE INSURANCE COMPANY
DEATH RATES PER 1,000 POLICYHOLDERS - ANNUAL BASIS
INDUSTRIAL DEPARTMENT · WEEKLY PREMIUM-PAYING BUSINESS

DEATH RATES BY MONTHS: 1939 AND 1940



(DEC)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1939	8.5	8.6	8.9	8.3	8.1	7.2	6.9	6.9	6.7	6.9	7.3	7.5
1940	8.3	8.7	8.6	8.1	7.5	7.3	7.0	7.4	6.8	7.0	7.1	7.6

DEATH RATES FOR JANUARY TO DECEMBER, 1932 - 1940



Rates for 1940 are provisional.

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